

HUNT RIVER ROAD BRIDGE  
Hunt River Road (Post Road-U.S. Route 1)  
over New Haven Railroad  
North Kingstown  
Washington County  
Rhode Island

HAER NO. RI-48

HAER  
RI,  
5-KINGIN,  
7-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
Philadelphia Support Office  
U.S. Custom House  
200 Chestnut Street  
Philadelphia, PA 19106

HISTORIC AMERICAN ENGINEERING RECORD

HUNT RIVER ROAD BRIDGE

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RI,  
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HAER No. RI-48

**Location:** Hunt River Road (Post Road-U.S. Route 1) over New Haven Railroad  
North Kingstown  
Washington County, Rhode Island

USGS Quadangle: East Greenwich, RI UTM: 19.294530.4611600

**Engineer/Architect:** Rhode Island State Board of Public Roads

**Fabricator:** Lewis F. Shoemaker Bridge Company  
Schuylkill Bridge Works  
Pottstown, PA

**Date of Construction:** 1930

**Present Owner:** State of Rhode Island Department of Transportation  
2 Capitol Hill  
Providence, RI 02903

**Present Use:** active highway bridge

**Significance:** The Hunt River Road Bridge is a significant example of standardized concrete bridge design initiated by Rhode Island Bridge Engineer Clarence L. Hussey during the 1920s, and is also significant as a well-preserved example of early twentieth-century hybrid bridge construction. The Hunt River Road Bridge is also evidence of the creation and improvement of Rhode Island's state highway system, as well as railroad-related highway improvements, brought about by the emergence of the automobile and growth of the urban environment.

**Project Information:** The National Railroad Passenger Corporation (Amtrak), in association with the Federal Railroad Administration (FRA), is proposing infrastructure projects to upgrade the Northeast Corridor Railroad right-of-way in Connecticut, Rhode Island, and Massachusetts. In consultation with the State Historic Preservation Officers (SHPOs), Amtrak and FRA have determined that the proposed "Northeast Corridor Improvement Project—Electrification: New Haven, Connecticut to Boston, Massachusetts" project will have adverse impacts on significant historic properties. Three memoranda of agreement outlining stipulations to eliminate, minimize, or mitigate adverse project impacts have been drafted by Amtrak, the FRA, and the respective SHPOs, and have been accepted by the Advisory Council on Historic Preservation. The stipulations include recordation of the Hunt River Road Bridge to Historic American Engineering Record standards.

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## PART I DESCRIPTIVE INFORMATION

The Hunt River Road Bridge is located in a commercial area in North Kingstown, Rhode Island and carries U.S. Route 1 over the Amtrak Northeast Corridor at Milepost 169.79.

The Hunt River Road Bridge is a 138-foot, steel-and-concrete, multi-beam bridge consisting of three spans: a 62-foot central, main track span, and two 33-foot approach spans. The bridge is oriented at a 67-degree skew to the railroad tracks. The total length of the bridge, including the approach walls, is 170 feet. The bridge deck has an overall width of 60 feet including railings, and the roadway is 40 feet wide between curbs, which guard eight-foot sidewalks on each side of the road. The spans rest on two full-width, solid, reinforced concrete pier walls located either side of the two railroad tracks. The piers include 9-foot long ramped collision posts at their bases. As built, the bridge had 18 feet of clearance above the rail, a distance that has been increased since the time of original construction. The main span consists of 15 steel members: 13 parallel, built-up, riveted, steel plate girders encased in concrete, cast integrally with the 8-inch thick reinforced concrete deck slab; and 2 outer fascia girders encased within the concrete parapet railings. The two approach spans each consist of 14 reinforced concrete T-beams that are integrally cast with the concrete deck. This structure is integrally cast with the abutments and piers to form a continuous rigid frame. The center span girders are supported on the piers, and rest on expansion joints located in the interstices between the approach span T-beams. The abutments consist of reinforced concrete bents on spread footings. The approach walls and abutments are filled with gravel.

The decorative scheme on the bridge is spare. The bottom edges of the outer fascia include slight brackets where they meet the piers. The bare concrete surface of the bridge is rubbed smooth, with rectangular, bush hammered panels on the parapet railing and piers. Each railing contains three recessed panels in the approach spans and five in the center span. Three large, flush panels are located on the piers. The parapets also include a simple cast railing and end posts. The end posts include blue-on-white enamel identification tiles containing the bridge name, number, contractor, and responsible state agency, the Rhode Island Board of Roads and Bridges.

## PART II HISTORICAL INFORMATION

The Hunt River Road Bridge in North Kingstown, Washington County, Rhode Island, spans the National Railroad Passenger Corporation (Amtrak) Northeast Corridor, a high-speed passenger rail line that connects Boston, New York City, Baltimore, and Washington, D.C. This route originally consisted of several passenger and freight railroads with end-to-end-connections, which were consolidated into the Amtrak system in 1971. The segment of the Northeast Corridor that includes the Hunt River Road Bridge was originally chartered in 1832 as the Providence and Stonington Railroad. Construction began in 1832, and in 1833 the railroad merged with several new Connecticut and Massachusetts railroads to form the New York, Providence and Boston, or the "Stonington Road". This railroad, along with the Boston and Maine and the Boston and Worcester was one of the first three major railroads in New England. The Providence-to-Stonington segment that includes the Hunt River Road Bridge was surveyed by Major George Washington Whistler, noted railroad surveyor and father of the painter James McNeill Whistler. In 1892 the Boston to New York line was included in the growing New York, New Haven & Hartford Railroad (New Haven) system. Through rail connection to New York City was not realized until the Thames River at Groton, Connecticut, was finally bridged in 1889 (Kerr 1995:124-126). This bridge is still known locally and by Amtrak as the Hunt's River Road Bridge, a holdover railroad place name that refers to the original name of the road. Both the railroad tracks and the Hunt's River Road-Post Road bridge cross the Hunt's River northeast of the bridge.

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The Hunt River Road Bridge, also known as Rhode Island Department of Transportation (RIDOT) Bridge Number 7, is a component of a massive roads-and-bridges program undertaken by the Rhode Island State Board of Public Roads in the 1920s and 1930s. This program included a new state highway system, improvement of linking roads, and replacement of obsolescent bridges (Clouette and Roth 1985:32-33). The Hunt River Road Bridge was a component of a Post Road (U.S. Route 1) improvements program, as well as a cooperative grade crossing elimination project involving the New York, New Haven & Hartford Railroad (New Haven Railroad). Under the Rhode Island-New Haven project agreement, state road improvement funding was augmented by federal aid, and the railroad paid for the cost of the primary steel work and one-third of the construction costs exclusive of paving. Rhode Island was one of first states to advance federal grade crossing elimination funds to the construction phase. The cooperative agreement also stipulated that all bridges be designed to accommodate four tracks under their central spans, with space for one future additional track under each approach span. The bridge decks were also designed so that the sidewalks could be narrowed to accommodate additional future traffic lanes (State of Rhode Island 1928:99, 1929:84, 1930:81).

The New Haven Railroad approved the Hunt River Road Bridge clearances and design in early 1929. The construction contract for the bridge, Federal Aid Project No. 51-E, was awarded to North Attleboro, Massachusetts contractor Munroe & Westcott, whose bid of \$46,400 for construction was the lowest submitted. A temporary timber bridge was erected adjacent to the present structure to carry highway traffic while construction was in progress. The steel girders and trusses for the new Hunt River Road Bridge were fabricated by the Shoemaker Bridge Company of Pottstown, Pennsylvania, which submitted the lowest bid of \$10,233. The major steel components were delivered by rail to the nearby East Greenwich rail siding and moved to the bridge site and erected by the New Haven Railroad. Construction began May 1st, 1929. (State of Rhode Island 1931:117-118)

The Hunt River Road Bridge, which combines both Melan- and rigid-frame construction, is significant as a well-preserved example of hybridized standard bridge construction types from the early twentieth century. The main span is derivative of the Melan system, patented by Joseph Melan for arch bridges in 1894 and adopted to straight spans by F.W. Petterson of Pittsburgh in 1898. In this design, main bridge spans are supported by riveted, built-up steel girders or trusses entirely encased in concrete. By 1905 bridge engineers had determined that strategically-located conventional bar reinforcement was adequate to withstand tensile stresses. The Melan encased girder configuration was considered redundant as the steel members were actually capable of carrying dead and live loads on their own, and the concrete served no structural function (Condit 1961:195-218). The approach spans of the Hunt River Road Bridge are of rigid-frame construction, and "consist of [concrete T-] beams which are connected by specially-designed reinforcement steel with the pier and abutment bents to form rigid frames" (State of Rhode Island 1931:115). This cost-saving, wholly-reinforced, rigid-frame concrete bridge design became popular after World War I and was first used on a large scale in the 74 bridges of Arthur G. Hayden's Westchester Expressway in New York (Hayden 1931:1-4). This continuous-form structure was particularly adaptable to highway arches and encouraged the use of comprehensive external decorative schemes. It was extensively employed in the construction of the Merritt Parkway in Connecticut, as well as the Greenwood and Main Street bridges.

The Hunt River Road Bridge is similar in appearance and construction to several other concrete highway bridges erected by the bridge department of the Rhode Island State Board of Public Roads over the New York, New Haven & Hartford Railroad right-of-way in Rhode Island during the 1930s, including the Main Street Bridge, South Kingstown (HAER RI-47), and the Greenwood Railroad Bridge, Warwick (HAER RI-49). Rhode Island's highway bridge improvement program began in 1912 with the formation of a separate bridge division within the Rhode Island State Board of Public Roads. The bridge division director, Clarence L. Hussey (1885-1925), was Rhode Island's first bridge engineer. Hussey was e

ationally-prominent bridge engineer noted for his original contributions to the construction of concrete arch bridges and concrete engineering technology, including an elegant, cost- and weight-saving, modified-spandrel, concrete-arch bridge design (Henderson 1926:1632-1633, Providence Sunday Journal 1925:3). Under Hussey, the bridge division utilized stenderized plans for bridge replacement and selected concrete for the major bridge building material due to its strength, longevity, and low maintenance requirements, as well as ease of construction. This factor encouraged the use of local contractors (Clouette and Roth 1988:31). These bridges also included standardized features such as bush-hammered, rectangular, decorative panels located so as to mask joints, and blue-on-white glazed porcelain tiles at the parapet railing ends that indicate the bridge name, number, contractor, and responsible state agency, the Board of Public Roads.

The unusual combination of a monolithic, Melan-type concrete-encased, steel plate girder with an integrally cast deck, and rigid-frame, reinforced, concrete T-beam construction for the approach spans, piers, and abutments was developed for the Hunt River Road Bridge as it "provided a convenient method of supporting the concrete floor forms without independent centering supports that would have been very complicated due to the clearance required for railroad operations" (State of Rhode Island 1931:115). This hybrid variation was a solution to logistical constraints rather than a true engineering innovation. The Hunt River Road Bridge is one of 318 steel stringer/multi-beam or girder steel-and-concrete bridges constructed in Rhode Island between 1900 and 1991. This group of bridges demonstrates the versatility of multi-beam bridge construction in Rhode Island during the twentieth century. Only 33 of these bridges were built before 1945, with the first of the collaborative railroad grade crossings built at Summit, Rhode Island in 1927, making the Hunt River Road Bridge a relatively early local example of the type (Adams and Tait 1994).

### PART III SOURCES OF INFORMATION

#### A. Plans and Drawings

Rhode Island Department of Transportation, Plan Room.

#### B. Historic Views

Rhode Island Department of Transportation. View of north elevation ca. 1937. Clarence Hussey Bridge Photograph Collection photograph no. 7112.

#### C. Bibliography

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D. Interviews

None conducted

### Location Map

